What is claimed is:

1. An electrochemical cell, which comprises:
   a) a casing;
   b) an anode;
   c) a cathode comprising a cathode active material contacted to a titanium current collector, wherein the titanium current collector is provided with an outer layer in contact with the cathode active material and consisting essentially of titanium oxide; and
   d) an electrolyte activating the anode in electrical association with the cathode housed in the casing.

2. The electrochemical cell of claim 1 wherein the titanium current collector is either a screen or a foil.

3. The electrochemical cell of claim 1 wherein the titanium oxide layer has a thickness from about 135 nm to about 240 nm.

4. The electrochemical cell of claim 1 wherein the cathode active material is selected from the group consisting of silver vanadium oxide, copper silver vanadium oxide, copper vanadium oxide, manganese dioxide, cobalt oxide, nickel oxide, copper oxide, titanium disulfide, copper sulfide, iron sulfide, iron disulfide, carbon, fluorinated carbon, and mixtures thereof.

5. The electrochemical cell of claim 1 wherein the cathode active material is selected from the group consisting of a carbonaceous material, a metal, a metal oxide, a mixed metal oxide, a metal sulfide, and mixtures thereof.

6. The electrochemical cell of claim 1 wherein the cathode further comprises at least one of a binder material and a conductive additive.

7. The electrochemical cell of claim 6 wherein the binder material is selected from the group consisting of polytetrafluoroethylene, polyvinylidene fluoride, polyethylenetetrafluoroethylene, polyamides, polyimides, and mixtures thereof.

8. The electrochemical cell of claim 6 wherein the conductive additive is selected from the group consisting of carbon, graphite powder, acetylene black, titanium powder, aluminum powder, nickel powder, stainless steel powder, and mixtures thereof.

9. The electrochemical cell of claim 1 wherein the casing is of titanium and also comprises an outer layer consisting essentially of titanium oxide.

10. An electrochemical cell, which comprises:

a) a casing;

b) an anode;

c) a cathode comprising a cathode active material contacted to a titanium current collector, wherein the titanium current collector is provided with an outer layer consisting essentially of titanium oxide in contact with the cathode active material, the titanium oxide either characterized as having been provided by subjecting the titanium current collector to oxidation at an elevated temperature in an oxygen-containing environment or characterized as having been provided by subjecting the titanium current collector to an electrolytic bath at an applied voltage of about 3 volts to about 30 volts; and

d) an electrolyte activating the anode in electrical association with the cathode housed in the casing.

11. The electrochemical cell of claim 10 wherein the oxidizing atmosphere is air.

12. The electrochemical cell of claim 10 wherein the elevated temperature is at least about 200°C for at least about 5 minutes.

13. The electrochemical cell of claim 10 wherein the titanium oxide layer has a thickness from about 135 nm to about 240 nm.

14. The electrochemical cell of claim 10 wherein the titanium current collector is subjected to the applied voltage for a time period ranging from about 0.5 second to about 60 seconds.

15. The electrochemical cell of claim 10 wherein the titanium oxide is characterized as having been provided by subjecting the titanium current collector to the electrolytic bath of oxalic acid at an applied voltage of about 3 volts to about 30 volts for a time period ranging from about 0.5 seconds to about 60 seconds.

16. An electrode, which comprises:

a) an electrode active material; and

b) a titanium current collector provided with an outer layer in contact with the electrode active material and consisting essentially of titanium oxide in contact with the electrode active material.

17. The electrode of claim 16 wherein the titanium current collector is either a screen or a foil.

18. The electrode of claim 16 wherein the titanium oxide layer has a thickness from about 135 nm to about 240 nm.

19. The electrode of claim 16 wherein the electrode active material is selected from the group consisting of silver vanadium oxide, copper silver vanadium oxide, copper vanadium oxide, manganese dioxide, cobalt oxide, nickel oxide, copper oxide, titanium disulfide, copper sulfide, iron sulfide, iron disulfide, carbon, fluorinated carbon, and mixtures thereof.

20. An electrode, which comprises:

a) an electrode active material; and

b) a titanium current collector provided with an outer layer consisting essentially of titanium oxide in contact with the electrode active material, the titanium oxide either characterized as having been provided by subjecting the titanium current collector to oxidation at an elevated temperature in an oxygen-containing environment or characterized as having been provided by subjecting the titanium current collector to an electrolytic bath at an applied voltage of about 3 volts to about 30 volts.

21. The electrode of claim 20 wherein the oxidizing atmosphere is air.

22. The electrode of claim 20 wherein the elevated temperature is at least about 200°C for at least about 5 minutes.

23. The electrode of claim 20 wherein the titanium oxide layer has a thickness from about 135 nm to about 240 nm.

24. The electrode of claim 20 wherein the titanium current collector is subjected to the applied voltage for a time period ranging from about 0.5 second to about 60 seconds.

25. The electrode of claim 20 wherein the titanium oxide is characterized as having been provided by subjecting the titanium current collector to the electrolytic bath of oxalic acid at an applied voltage of about 3 volts to about 30 volts for a time period ranging from about 0.5 seconds to about 60 seconds.

26. The electrode of claim 20 as either a cathode or an anode.

27. A method for constructing an electrochemical cell, comprising the steps of:

a) providing an anode;

b) providing a cathode, comprising the steps of:

i) providing a titanium current collector;

ii) oxidizing the titanium current collector to provide it with an outer layer consisting essentially of titanium oxide; and

iii) contacting the thusly conditioned titanium current collector with a cathode active material to provide the cathode; and

c) activating the anode and cathode housed inside a

casing with an electrolyte.

28. The method of claim 27 wherein the titanium current collector is either a screen or a foil.

29. The method of claim 27 wherein the titanium oxide layer has a thickness from about 135 nm to about 240 nm.

30. The method of claim 27 wherein the oxidizing atmosphere is air.

31. The method of claim 27 including selecting the cathode active material from the group consisting of silver vanadium oxide, copper silver vanadium oxide, copper vanadium oxide, manganese dioxide, cobalt oxide, nickel oxide, copper oxide, titanium disulfide, copper sulfide, iron sulfide, iron disulfide, carbon, fluorinated carbon, and mixtures thereof.

32. The method of claim 27 including mixing the cathode active material with at least one of a binder material and a conductive additive prior to contact with the current collector.

33. A method for constructing an electrochemical cell, comprising the steps of:

a) providing an anode;

b) providing a cathode, comprising the steps of:

i) providing a titanium current collector;

ii) subjecting the titanium current collector either to oxidation at an elevated temperature in an oxygen-containing environment or to an electrolytic bath at an applied voltage of about 3 volts to about 30 volts to thereby provide the titanium current collector with an outer layer consisting essentially of titanium oxide; and

iii) contacting the thusly conditioned titanium current collector with a cathode active material to provide the cathode; and

c) activating the anode and cathode housed inside a casing with an electrolyte.

34. The method of claim 33 wherein the elevated temperature is at least about 200°C for at least about 5 minutes.

35. The method of claim 33 wherein the titanium oxide layer has a thickness from about 135 nm to about 240 nm.

36. The method of claim 33 wherein the titanium current collector is subjected to the applied voltage for a time period ranging from about 0.5 second to about 60 seconds.

37. The method of claim 33 wherein the titanium oxide is characterized as having been provided by subjecting the titanium current collector to the electrolytic bath of oxalic acid at an applied voltage of about 3 volts to about 30 volts for a time period ranging from about 0.5 seconds to about 60 seconds.